

NEUROSCIENCE

Leading excellence in translational neuroscience in Australia.



OUR VISION is to improve the health and well-being of people living with neurological conditions, in Australia and globally.

Diseases of the central nervous system affect millions of people around the world, profoundly affecting individuals, families, and society. Many of these disorders are not curable. Our research spans the following themes:

- Neurodegenerative diseases such as Alzheimer's, Parkinson's, and Motor Neurone Disease
- Neuroimmunology (Multiple Sclerosis)
- Neurological diseases (Epilepsy)
- Neurophysiology and Neuromuscular diseases
- Neurotrauma
- Mental Health

In recent decades, major advances have deepened our understanding of how these diseases work at the molecular, cellular, and neural circuit levels. The complex interactions between the brain, genetics and environment mean one treatment does not suit everyone.

OUR MISSION is to meet the challenge of **translating fundamental discoveries** about mechanisms of diseases affecting the central nervous system into **tangible therapeutic strategies**.

We are the first university academic department in Australia dedicated to developing and providing solutions for patients with neurological conditions. We are based at the School of Translational Medicine at Monash University's Alfred Campus, a vibrant precinct based around one of the world's top 100 hospitals, The Alfred, Australia's largest clinical trials site.



Globally, neurological conditions and disorders claim 11 million lives each year (WHO, 2025).

In Australia, fatal total burden of disease for neurological diseases in Australia is up by 42% over the past decade. Estimated annual cost \$45.5B (AIHW, 2022).



Est. 2018.
228 researchers



\$15M annual
Research funding



300 publications



90 Higher Degree
Research Students



Clinical Trials
Commercial \$16M
(23 trials)

Investigator-led \$9M
(12 studies)



Biobanks
8 containing
10,000+ samples

Partnerships

AlfredHealth



EXCELLENCE IN TRANSLATIONAL NEUROSCIENCE

Translational neuroscience aims to bridge the gap between laboratory discoveries and clinical applications to improve our understanding and treatments. We approach clinical problems identified by clinicians, researchers, scientists, patients and others to directly improve outcomes for patients.

Tackling the big challenges in biomedical research is no longer the domain of a single discipline: that's why we are members of the Translational Medicine **Gastroenterology, Immunology and Neuroscience (GIN) Discovery Program**, which brings together all three disciplines, and a member of **Monash Neuroscience** — a university-wide initiative.

We use purpose-built, state-of-the-art research laboratories with advanced histological techniques, molecular technologies, and behavioural tests at the Alfred campus.

MSBASE REGISTRY

The vision of the **MSBase Registry** is to be the global leader in supporting collaborative, real-world, quality research in multiple sclerosis and other neuro-immunological diseases. In just over 20 years of operation, it has amassed over 122,000 patient records from 45 countries, making it the largest organised global repository of longitudinal, real-world MS patient data.

The MSBase Foundation supports registry members by providing global governance, database tools, and research support to enable worldwide collaborative outcomes and epidemiologic research for the benefit of people with multiple sclerosis and other neuro-immunological diseases.



ALFRED-MONASH EARLY PHASE NEUROSCIENCE CLINICAL TRIALS UNIT

This is the only dedicated neuroscience early-phase clinical trial unit in Australia, and one of few in the world. It is embedded within the Neuroscience inpatient ward at The Alfred Hospital, Australia's biggest clinical trials site. It has capacity for overnight and multiday stays, as well as continuous, multimodality neurophysiological monitoring. We collaborate with various organisations to facilitate new treatments, including Nucleus Network and Neuroscience Trials Australia.



BRAIN DISEASE MODELS IN A DISH

Stem cell technologies are revolutionising neuroscience by enabling the development of advanced models for studying brain function, neurodegenerative diseases, and neural regeneration. We take stem cells from blood samples donated by patients with neurological conditions from the hospital to engineer neurons in the laboratory to test drugs and see the responses to how effective the drugs are for each patient.

These innovations support the creation of patient-specific neural cells, offering unprecedented insights into disease mechanisms and accelerating the discovery of targeted therapies for epilepsy, multiple sclerosis and brain cancer.

IMAGING REPOSITORY — ALFRED-MONASH XNAT

The Alfred-Monash XNAT is an image databank developed by the Monash iBRAIN research group, in partnership with Alfred Health. It provides research users with high-resolution, detailed images and big datasets linked to their projects, registries and between collaborative groups. Around 700 MRI brain images are archived each month. Clinical trial scans can also be sent to sponsors, making access easy.

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